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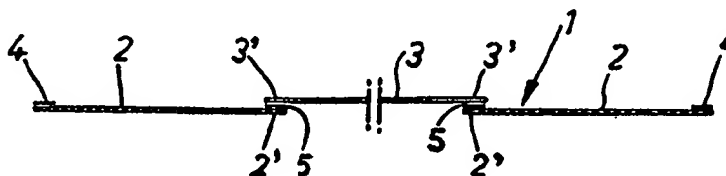
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| (21) International Application Number: PCT/FI90/00032 (22) International Filing Date: 31 January 1990 (31.01.90) (30) Priority data: 890465 1 February 1989 (01.02.89) FI (71) Applicant (for all designated States except US): YPAP OY [FI/FI]; SF-32100 Ypäjä (FI). (72) Inventor; and (75) Inventor/Applicant (for US only) : SILVESALO, Juha [FI/ FI]; Lemmointie 16-18 A 1, SF-03600 Karkkila (FI). (74) Agent: LEITZINGER OY; Ruoholahdenkatu 8, SF-00180 Helsinki (FI). | | (81) Designated States: AT (European patent), BE (European patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), US. Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Finnish).</i> |

(54) Title: **BANDLIKE PACKING MATERIAL**



(57) Abstract

The invention concerns a bandlike packing material (1) for accomplishing an at least partly breathing and at least partly transparent packing for a product to be packed in a so-called flow-pack machine. The packing material is composed of one or more bands (2) of a breathing material and of one or more bands (3) of transparent membrane. The band (2) of the material able to breath is at its longitudinal edge region (2') joined to the longitudinal edge region (3') of the band (2) of transparent membrane. The band (2) of breathing material is provided with an adhesive (4) on at least part of the places to become seaming areas of the package.

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Bandlike Packing Material

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5 The present invention relates to a band-form material suitable for packaging products into an at least partly gas-permeable and at least partly transparent package in a so-called flow-pack packaging machine.

10 Gas-permeable and at least partly transparent bags and packages have been conventionally available. In the fabrication of such bags the production of the package itself has been separate from its use in packaging, which causes additional costs.

15 It has been problematic in the packaging industry to produce a band-form packaging material which is gas-permeable and at least partly transparent or provided with a window, and further, could be sent to the user in the form of suitable rolls, from which the packaging industry users, for instance, bakeries can fabricate bag-shaped packages using a
20 flow-pack machine so that the insertion of the product into the package takes place simultaneously with the fabrication of the package.

25 Hereto it has been customary to operate the flow-pack machines using different kinds of plastic films which are nonpermeable to gases but are printable and transparent.

30 It is thus an object of the invention to achieve a band-form packaging material which is applicable for fabricating an at least partly gas-permeable and partly transparent package for a product to be packaged in the so-called flow-pack machine.

35 This object is achieved according to the invention by fabricating the packaging material from one or several bands

of a gas-permeable material and one or several bands of a transparent film, and attaching the band of the gas-permeable material at its lateral edge to the lateral edge of the band of transparent film, and applying an adhesive to the band of transparent material onto at least a part of those areas which form the seam areas of the fabricated package.

The shapes of the band edges of the gas-permeable material as well as those of the transparent film can be varied to achieve a desired shape of the transparent area.

In a preferred embodiment of the invention the packaging material is fabricated from two bands of gas-permeable material and of a film band of transparent material placed between the two bands.

A preferred type of the gas-permeable material is paper, while the transparent film is preferred of a plastic polymer material.

The band of gas-permeable material and the band of transparent film are attached to each other by an overlapping seam, whereby the sealant adhesive is a room-temperature bonding type of adhesive.

The band of transparent film, or alternatively, a layer placed on the film is preferred of a material, which is capable of heat-sealing with the band of the gas-permeable material.

The glue applied on the band of gas-permeable material is preferred capable of heat-sealing.

In the following the invention is described with reference

to the enclosed drawings in which

Figure 1 shows diagrammatically a cross-section of the packaging material in accordance with the invention,

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Figure 2 shows a top view of the packaging material illustrated in Fig. 1 at a point of the surface forming the inside of the package, and

10 Figure 3 shows a similar view to that of Fig. 2 for another embodiment of the packaging material.

15 In Fig. 1 the reference number 1 designates a general form of the band-form packaging material in a diagrammatic cross-section. In this illustrated embodiment the packaging material 1 is formed from two bands of gas-permeable material, for instance, of paper band 2 and a band of transparent film, for instance, a polymer film 3 placed between the paper bands.

20

The band 2 of gas-permeable material is attached at its lateral edge area 2' to the corresponding lateral edge area 3' of the transparent film band 3 preferably using an overlapping seam sealed using a room-temperature bonding type of adhesive 5.

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30 The package is fabricated around the product to be packaged in a flow-pack machine of conventional technology by seaming the free lateral edge areas of both bands 2 of the gas-permeable material to each other. For this purpose the band 2 has been coated along the free edge of the band 2 with a glue 4 as illustrated in Fig. 2. The upside shown in Fig. 1 forms the inside of the final package.

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The band 3 of transparent film is of such material that can

be, for instance, heat-sealed to the band 2 of gas-permeable material in the cross direction of the packaging material 1. Thence, the ends of the package can be closed by heat-sealing.

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The band 3 can be inherently heat-sealable, or alternatively, it can be provided with a heat-seal layer produced by, for instance, applying a coat of lacquer.

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In case the transparent film band 3 is not sufficiently wide, the glue 4 can be applied, for instance, according to Fig. 3 to points forming the seams of the package, whereby a continuously sealed area is formed by the glue 4 with the band 3 of transparent film in the cross-direction of the packaging material band.

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The packaging material 1 according to the invention is produced as follows:

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A web of gas-permeable material paid off from a roll is coated with a heat-sealable glue 4 at desired points and the possibly desired imprintings are made. Next, the web is slit into bands 2 of desired width and edge shape, and a band 3 of transparent film material is seamed to the bands by the methods of conventional technology using, for instance a room-temperature bonding type of adhesive 5. The ready-to-use packaging material is wound into smaller rolls for delivery to customers, who then can use the material in a flow-pack machine for a simultaneous fabrication of the product package and insertion of a product into the packaging material using conventional technology.

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The packaging of a product into the packaging material 1 is performed by placing the product onto the band-form packaging material illustrated in Fig. 1, after which the

flow-pack machine automatically turns the lateral edges of the packaging material up and presses the glue-coated areas 4 together, whereby a vertical seam is formed which remains in the ready package outside the package. The cross-
5 direction seams of the package are formed by compressing the tubular packaging material, which contains the inserted product, at both ends close to the product, whereby the glue 4 or the heat-sealable layer of band 3 seals the package at the seal areas thus permitting the packages containing the
10 products to be separated from each other.

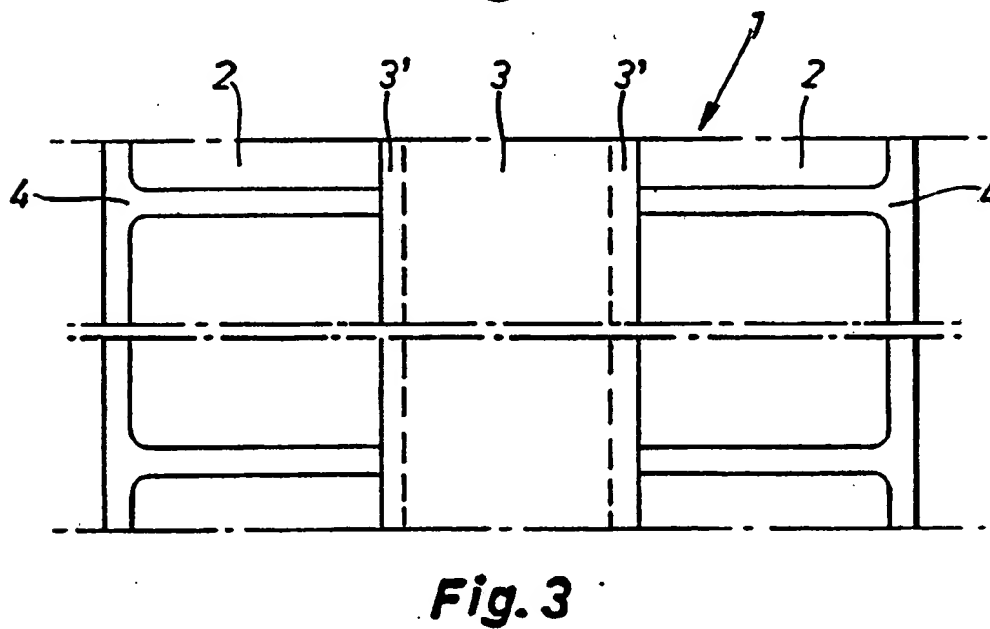
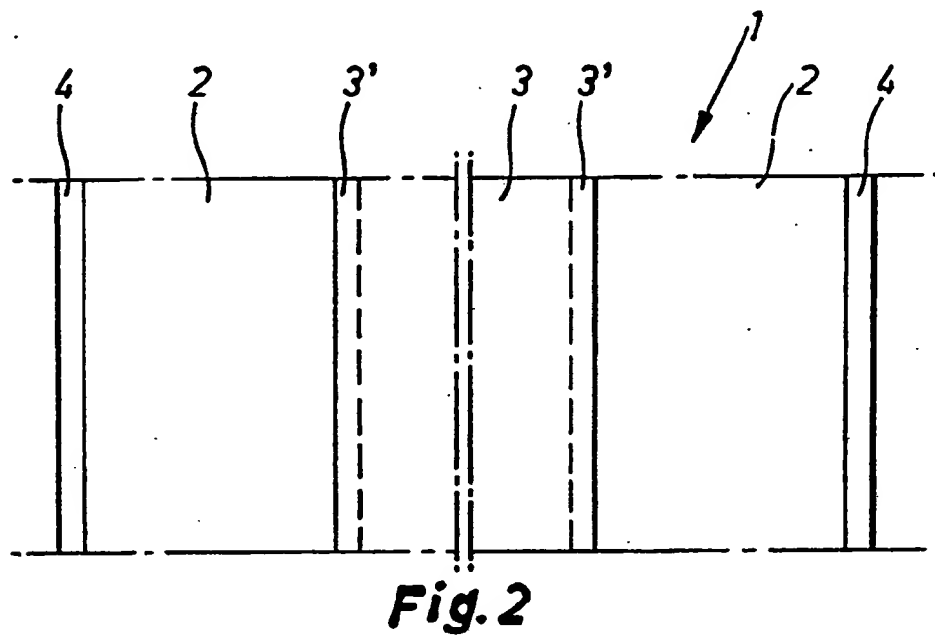
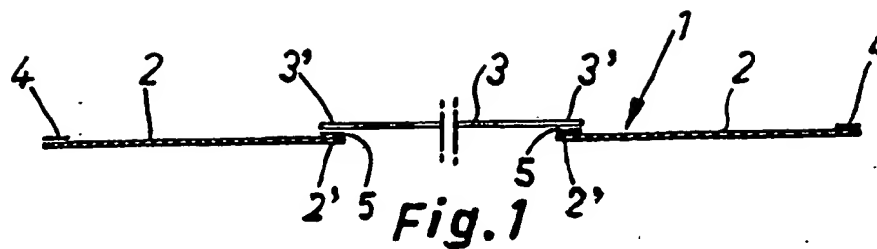
WHAT IS CLAIMED IS:

1. A band-form packaging material (1) suitable for fabricating a package which is at least partly gas-permeable and at least partly transparent in a so-called flow-pack machine, said packaging material (1) being formed from one or several bands (2) of a gas-permeable material and of one or several bands (3) of a transparent film, whereby the band (2) of the gas-permeable material is attached along its lateral edge (2') to the lateral edge (3') of the band (3) of the transparent film material, characterized in that a glue (4) is applied to the band (2) of gas-permeable material to at least those areas which form the lateral and cross-direction seal areas in the final fabricated package.
2. A packaging material in accordance with claim 1, characterized in that the packaging material (1) is formed from two bands (2) of gas-permeable material and a band (3) of transparent film placed between the gas-permeable bands.
3. A packaging material in accordance with claim 1 or 2, characterized in that the gas-permeable packaging material is paper.
4. A packaging material in accordance with any of the foregoing claims 1...3, characterized in that the transparent film material is plastic polymer.
5. A packaging material in accordance with any of the foregoing claims 1...4, characterized in that the band (2) of gas-permeable material and the band (3) of the transparent film material are attached to each other using an overlapping seam.

5 6. A packaging material in accordance with claim 5, characterized in that a room-temperature bonding type of adhesive (5) is used for sealing the overlapping seam between the band (2) of gas-permeable material and the band (3) of transparent film material.

10 7. A packaging material in accordance with any of the foregoing claims 1...6, characterized in that the band (3) of transparent film itself or a layer produced on the film is capable of heat-sealing with the band (2) of gas-permeable material.

15 8. A packaging material in accordance with any of the foregoing claims 1...7, characterized in that the glue (4) applied on the band (2) of gas-permeable material is capable of heat-sealing.



INTERNATIONAL SEARCH REPORT

International Application No **PCT/FI 90/00032**

| I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: B 65 D 65/40 | | | | | | | | | | | | | | | | | |
|---|---|-------------------------------------|---|--|--|---|---|--|--|---|---------------------------------|--|--|------------|----------|---|------------|
| II. FIELDS SEARCHED <div style="text-align: right; font-size: small;">Minimum Documentation Searched⁷</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%; border: none; vertical-align: top;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; padding: 2px;">Classification System</th> <th style="text-align: left; padding: 2px;">Classification Symbols</th> </tr> <tr> <td style="padding: 5px;">IPC5</td> <td style="padding: 5px;">B 65 D</td> </tr> </table> </td> <td style="border: none;"></td> </tr> </table> <div style="text-align: center; font-size: x-small; margin-top: 5px;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched⁸</div> | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; padding: 2px;">Classification System</th> <th style="text-align: left; padding: 2px;">Classification Symbols</th> </tr> <tr> <td style="padding: 5px;">IPC5</td> <td style="padding: 5px;">B 65 D</td> </tr> </table> | Classification System | Classification Symbols | IPC5 | B 65 D | | | | | | | | | | |
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| IPC5 | B 65 D | | | | | | | | | | | | | | | | |
| SE,DK,FI,NO classes as above | | | | | | | | | | | | | | | | | |
| III. DOCUMENTS CONSIDERED TO BE RELEVANT¹ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: left; padding: 2px;">Category⁹</th> <th style="width: 70%; text-align: left; padding: 2px;">Citation of Document,¹¹ with indication, where appropriate, of the relevant passages¹²</th> <th style="width: 20%; text-align: left; padding: 2px;">Relevant to Claim No.¹³</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;"> CH, A5, 647209 (PAPYRIA AG, RÜMLANG) 15 January 1985, see page 3, column 1, line 23 - line 29; figures 1,2 <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;"> US, A, 2047980 (O.J. OLM ET AL) 21 July 1936, see the whole document <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;"> US, A, 2099301 (C.S. HAMERSLEY ET AL) 16 November 1937, see the whole document <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;"> EP, A2, 0225987 (UNILEVER NV) 24 June 1987, see the whole document <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> </tbody> </table> | | | Category ⁹ | Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹² | Relevant to Claim No. ¹³ | X | CH, A5, 647209 (PAPYRIA AG, RÜMLANG) 15 January 1985, see page 3, column 1, line 23 - line 29; figures 1,2 <div style="text-align: center;">--</div> | 1-8 | Y | US, A, 2047980 (O.J. OLM ET AL) 21 July 1936, see the whole document <div style="text-align: center;">--</div> | 1-8 | Y | US, A, 2099301 (C.S. HAMERSLEY ET AL) 16 November 1937, see the whole document <div style="text-align: center;">--</div> | 1-8 | Y | EP, A2, 0225987 (UNILEVER NV) 24 June 1987, see the whole document <div style="text-align: center;">--</div> | 1-8 |
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| <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div style="width: 45%;"> <p>* Special categories of cited documents:¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div> | | | | | | | | | | | | | | | | | |
| IV. CERTIFICATION <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of the Actual Completion of the International Search</td> </tr> <tr> <td style="padding: 5px;">29th May 1990</td> </tr> <tr> <td style="padding: 2px;">International Searching Authority</td> </tr> <tr> <td style="padding: 5px; text-align: center;">SWEDISH PATENT OFFICE</td> </tr> </table> </td> <td style="width: 50%; border: none; vertical-align: top;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of Mailing of this International Search Report</td> </tr> <tr> <td style="padding: 5px; text-align: center;">1990 -05- 31</td> </tr> <tr> <td style="padding: 2px;">Signature of Authorized Officer</td> </tr> <tr> <td style="padding: 5px;"> <div style="text-align: center;"> Kenneth Gustafsson </div> </td> </tr> </table> </td> </tr> </table> | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of the Actual Completion of the International Search</td> </tr> <tr> <td style="padding: 5px;">29th May 1990</td> </tr> <tr> <td style="padding: 2px;">International Searching Authority</td> </tr> <tr> <td style="padding: 5px; text-align: center;">SWEDISH PATENT OFFICE</td> </tr> </table> | Date of the Actual Completion of the International Search | 29th May 1990 | International Searching Authority | SWEDISH PATENT OFFICE | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of Mailing of this International Search Report</td> </tr> <tr> <td style="padding: 5px; text-align: center;">1990 -05- 31</td> </tr> <tr> <td style="padding: 2px;">Signature of Authorized Officer</td> </tr> <tr> <td style="padding: 5px;"> <div style="text-align: center;"> Kenneth Gustafsson </div> </td> </tr> </table> | Date of Mailing of this International Search Report | 1990 -05- 31 | Signature of Authorized Officer | <div style="text-align: center;"> Kenneth Gustafsson </div> | | | | | |
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| <div style="text-align: center;"> Kenneth Gustafsson </div> | | | | | | | | | | | | | | | | | |

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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. PCT/FI 90/00032

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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|----------------------------|---------------------|
| CH-A5- 647209 | 85-01-15 | NONE | |
| US-A- 2047980 | 36-07-21 | NONE | |
| US-A- 2099301 | 37-11-16 | NONE | |
| EP-A2- 0225987 | 87-06-24 | DE-C- 3544384 | 87-07-09 |